Amendments to the Claims:

Claims 1 – 4 (Cancelled)

5.   (Currently amended)   An image process program for inputting a digital image wherein one or more color components are non-existent in each pixel, obtained from one of a single-sensor image-pickup system, a double-sensor image-pickup system, and a triple-sensor pixel spatial offset image-pickup system, estimating the non-existent color component for each pixel so as to output a color digital image, the program comprising the steps of:

combination average calculation processing for combining two or more pixels, from a plurality of pixels having a similar color component near a pixel of interest, and calculating an average for each combination of the color components of two or more pixels for a plurality of different combinations of pixels in a region near the pixel of interest;

~~color correlation estimation processing for estimating color correlation which is a correlation between different color components within the regions near the pixel of interest; and~~

color correlation calculation processing for calculating parameters to be used in a function for estimating one kind of color component from a different kind of color component within the region near the pixel of interest, and estimating a color

component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest; and

combination selection processing for selecting one of the plurality of combination averages calculated by ~~the~~ combination average calculation processing, as the non-existent color component for the pixel of interest, based upon the color ~~correlation~~ component estimated by ~~the~~ color correlation calculation ~~estimation~~ processing.

6.   (Currently amended)   The image processing program according to Claim 5, wherein the combination average calculation processing further includes the steps of:

processing for calculating fluctuation of the color component within the combination of two or more pixels;

~~and~~ wherein the color correlation ~~estimation~~ calculation processing further includes calculating reliability of the ~~estimated color correlation~~ calculated parameters;

and wherein, in the event that the reliability calculated ~~by the color correlation estimation processing~~ is high, ~~the combination selection~~ performing color correlation calculation processing to select one of the plurality of combination averages calculated by combination average calculation processing as the non-

existent color component of the pixel of interest, based upon the color component underline that continues underline estimated by the color correlation calculation processing ~~estimates the non-existent~~ ~~color component candidate for the pixel of interest based upon the estimation~~ ~~results of the color correlation and the color component obtained in the pixel of~~ ~~interest, and selects the combination average which is closest to the estimated non-~~ ~~existent color component candidate as the non-existent color component~~, and in the event that the reliability is low, the combination selection processing selects the combination average corresponding to the combination wherein fluctuation of the color component calculated by the combination average calculation processing is least as the non-existent color component.

7.   (Currently amended)   An image processing program for inputting a digital image wherein one or more color components are non-existent in each pixel, obtained from one of a single-sensor image-pickup system, a double-sensor image-pickup system, and a triple-sensor pixel spatial offset image-pickup system, estimating the non-existent color component for each pixel ~~so as~~ to output a color digital image, comprising the steps of:

initial, non-existent color component generating processing for combining two or more pixels from a plurality of pixels having the same color component near a pixel of interest, calculating an average for each combination of color component

values of two or more pixels for a plurality of different combinations of pixels in ~~the~~
a̲ region near the pixel of interest, and selecting one of the calculated averages as
the non-existent color component;

second non-existent color component generating processing for calculating
parameters to be used in a function for estimating one kind of color component from
a different kind of color component within the region near the pixel of interest, and
estimating a color component non-existent in the pixel of interest by said function
using the parameters and a color component obtained in the pixel of interest,
thereby generating the non-existent color component of the pixel of interest;
~~estimating the color correlation which is a correlation between different kinds of
color components near the pixel of interest for each pixel, and generating the non-
existent color component based upon the estimated color correlation and the color
component obtained in each pixel;~~

~~evaluation processing for evaluating reliability of the color correlation
estimated by the second non-existent color component estimation processing;~~ and

third non-existent color component generating processing for ~~assigning a
weight to the non-existent color component generated by the second non-existent
color component generating processing based upon the reliability evaluated by the
evaluation processing , and~~ calculating a weighted average for the non-existent
color component generated by the initial non-existent color generating processing

and the non-existent color component generated by the second non-existent color component generating processing ~~using the set weight~~, thereby generating the non-existent color component value.

8.   (Previously presented)   The image processing program according to Claim 7, further comprising region judgment processing for determining whether or not the region near the pixel of interest is a texture region, and also determining whether or not the region near the pixel of interest is an edge region, wherein in the event that judgment made by the region judgment processing is that the region is a texture region, the evaluation of the reliability is increased, and conversely in the event that judgment is made that the region is an edge region, the evaluation of the reliability is decreased.

9.   (New)   An image processing device, comprising:

an input circuit for inputting a digital image wherein one or more color components are non-existent in each pixel, obtained from one of a single-sensor image-pickup system, a double-sensor image-pickup system, or a triple-sensor pixel spatial offset image-pickup system:

a combination average calculation circuit for combining two or more pixels from a plurality of pixels having the same color component near a pixel of interest within the image signals input from the input circuit, and calculating an average

for the combination of the color components of two or more pixels for a plurality

kinds of combinations of pixels in a region near the pixel of interest;

a color correlation calculation circuit for calculating parameters to be used in

a function for estimating one kind of color component from a different kind of color

component within the region near the pixel of interest, and estimating a color

component non-existent in the pixel of interest by said function using the

parameters and a color component obtained in the pixel of interest; and

a combination selection circuit for selecting one of the plurality of

combination averages calculated by the combination average calculation circuits, as

the non-existent color component for the pixel of interest, based upon the color

component estimated by the color correlation calculation circuit.

10. (New) The image processing device according to claim 9,

wherein the combination average calculation circuit further calculates

the fluctuation of the color component within the combination of two or more pixels;

wherein the color correlation calculation circuit further calculates the

reliability of the calculated parameters;

and wherein, in the event that the reliability is high, the color

correlation calculation circuit selects one of the plurality of combination averages

calculated by the combination average calculation circuit as the non-existent color

component for the pixel of interest, based upon the color component estimated by the color correlation calculation circuit,

and, in the event that the reliability is low, the combination selection circuit selects the combination average corresponding to the combination wherein the fluctuation of the color component calculated by the combination average calculation circuit is the least, as the non-existent color component.

11.   (New)   An image processing device, comprising:

an input circuit for inputting a digital image wherein one or more color components are non-existent in each pixel, obtained from one of a single-sensor image-pickup system, a double-sensor image-pickup system, and a triple-sensor pixel spatial offset image-pickup system;

a first non-existent color component generating circuit for combining two or more pixels from a plurality of pixels having the same color component near the pixel of interest within the image signals input from the input circuit, calculating the average for the combination of the color components of two or more pixels for a plurality of kinds of combinations in a region near the pixel of interest, and selecting one of the calculated averages to generate the non-existent color component;

a second non-existent color component generating circuit for calculating parameters to be used in a function for estimating one kind of color component from

a different kind of color component within the region near the pixel of interest, and estimating a color component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest, thereby generating the non-existent color component of the pixel of interest; and

a third non-existent color component generating circuit for calculating a weighted average for the non-existent color component generated by the first non-existent color generating circuit and the non-existent color component generated by the second non-existent color component generating circuit, thereby generating the non-existent color component value.

12.   (New)   An image processing device, comprising:

input means for inputting a digital image wherein one or more color components are non-existent in each pixel, obtained from one of a single-sensor image-pickup system, a double-sensor image-pickup system, and a triple-sensor pixel spatial offset image-pickup system;

combination average calculation means for combining two or more pixels from a plurality of pixels having the same color component near a pixel of interest within image signals input from the input means, and calculating an average for the combination of the color components of two or more pixels for a plurality kinds of combinations of pixels in a region near the pixel of interest;

color correlation calculation means for calculating parameters to be used in a function for estimating one kind of color component from a different kind of color component within the region near the pixel of interest, and estimating a color component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest; and

combination selection means for selecting one of the plurality of combination averages calculated by the combination average calculation means, as the non-existent color component for the pixel of interest, based upon the color component estimated by the color correlation calculation means.

13. (New) The image processing device according to claim 12,

wherein the combination average calculation means further calculates a fluctuation of the color component within the combination of two or more pixels;

wherein the color correlation estimation calculation means further calculates reliability of the calculated parameters; and

wherein, in the event that the reliability is high, the color correlation calculation means selects one of the plurality of combination averages calculated by the combination average calculation means as the non-existent color component of the pixel of interest, based upon the color component estimated by the color correlation calculation means; and

in the event that the reliability is low, the combination selection means selects the combination average corresponding to the combination wherein the fluctuation of the color component calculated by the combination average calculation means is the least, as the non-existent color component.

14.   (New)   An image device, comprising:

input means for inputting a digital image wherein one or more color components are non-existent in each pixel, obtained from one of a single-sensor image-pickup system, a double-sensor image-pickup system, and a triple-sensor pixel spatial offset image-pickup system;

first non-existent color component generating means for combining two or more pixels from a plurality of pixels having the same color component near a pixel of interest within image signals input from the input means, calculating an average for the combination of the color components of two or more pixels for a plurality of kinds of combinations in a region near the pixel of interest, and selecting one of the calculated averages to generate the non-existent color component;

second non-existent color component generating means for calculating parameters to be used in a function for estimating one kind of color component from a different kind of color component within a region near the pixel of interest, and

third non-existent color component generating means for calculating the weighted average for the non-existent color component generated by the first non-existent color generating means and the non-existent color component generated by the second non-existent color component generating means, thereby generating the non-existent color component value.

15.   (New)   The image processing device according to claim 14, further comprising weighting region setting means for selecting a pixel set for calculating a weight to be used to calculate the weighted average within the region near the pixel of interest,

wherein the third non-existent color component generating means uses a value calculated based upon a statistical amount of pixel values of the pixel set, as a weight to be used to calculate the weighted average.

16.   (New)   The image processing device according to claim 15 wherein the weighting region setting means lies within a region with a predetermined size near the pixel of interest and comprising a plurality of sub-regions with a size smaller than the predetermined size, and selects a target sub-region from the sub-regions based upon pixel values in the sub-regions, to set a union of pixels contained in the selected sub-region as the pixel set.

17. (New)   The image processing device according to claim 15 wherein the second non-existent color component generating means calculates approximation parameters based upon pixel values of the pixel set selected by the region setting means.

18. (New)   The image processing device according to claim 16, wherein the second non-existent color component generating means calculates approximation parameters based upon pixel values of the pixel set selected by the weighting region setting means.

19. (New)   The image processing device according to claim 15, wherein the statistical amount represents uniformity of the pixel values of the pixel set.

20. (New)   The image processing device according to claim 16, wherein the statistical amount represents uniformity of the pixel values of the pixel set.